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Fig. 1

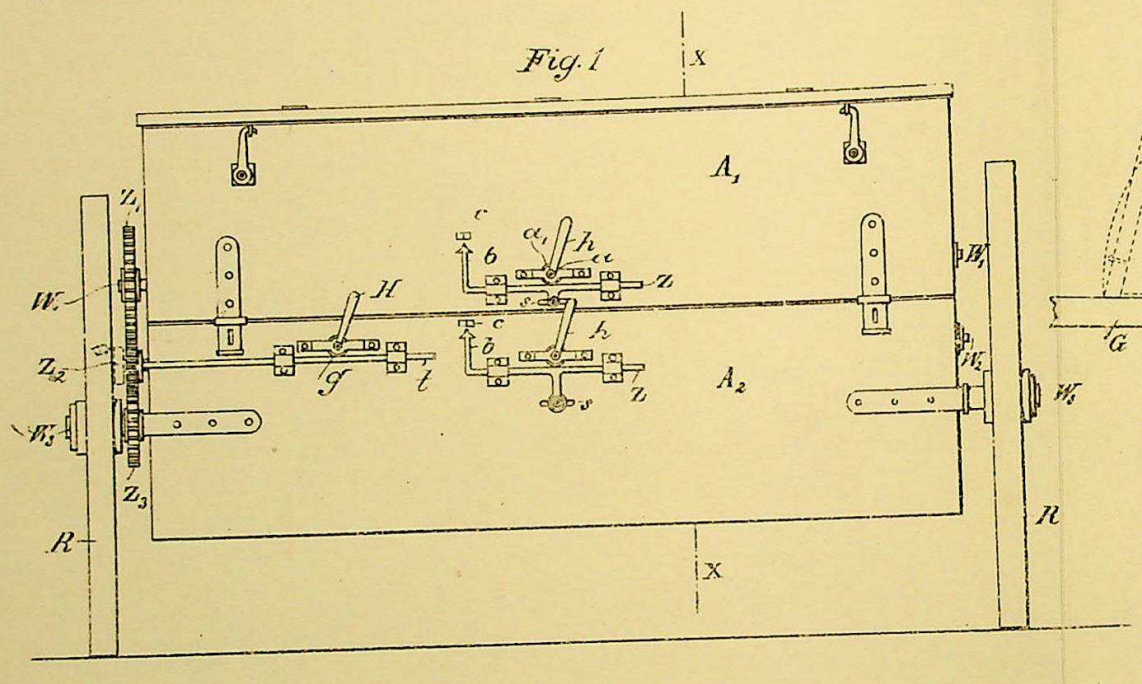


Fig. 2

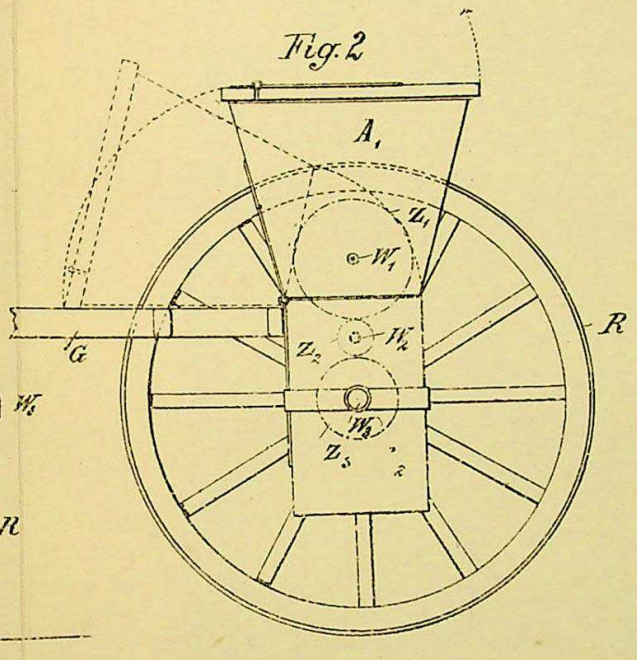


Fig. 3

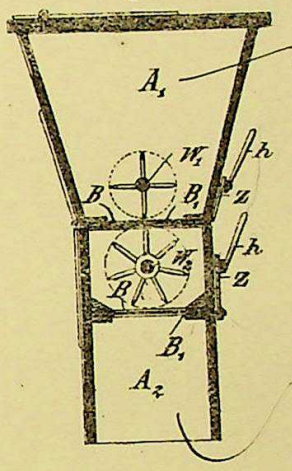


Fig. 4

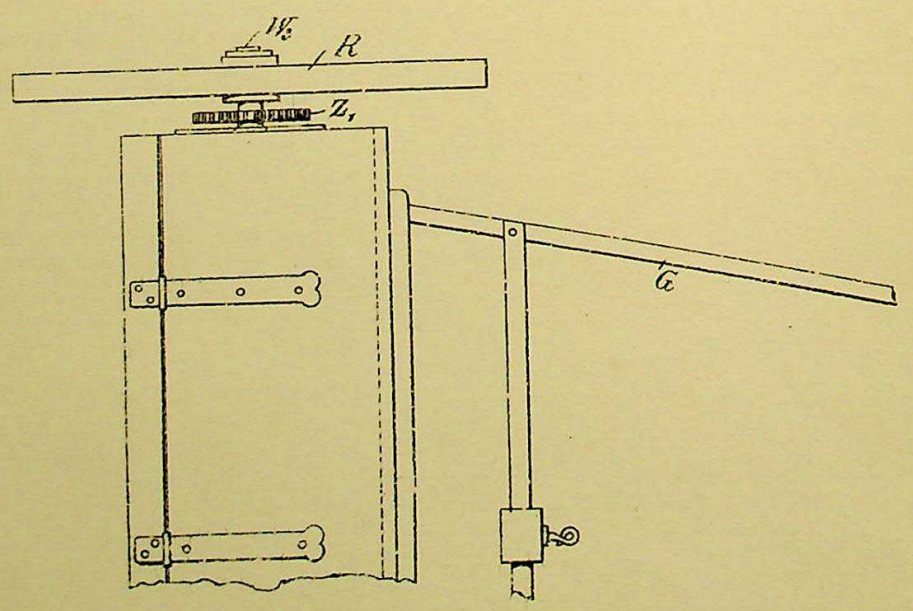


Fig. 5

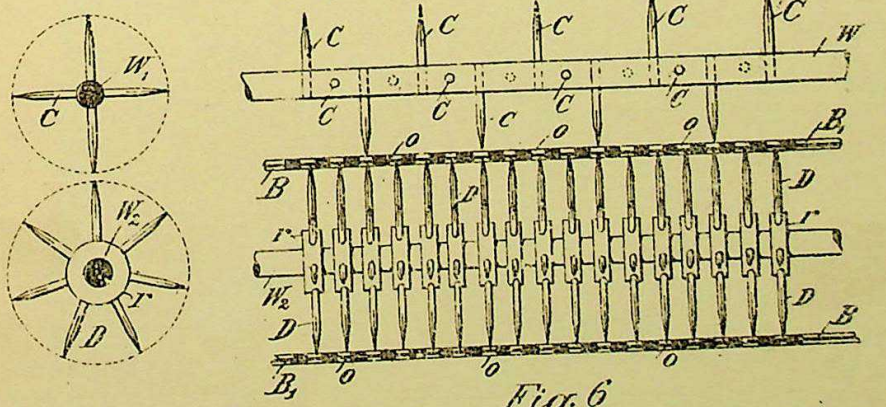
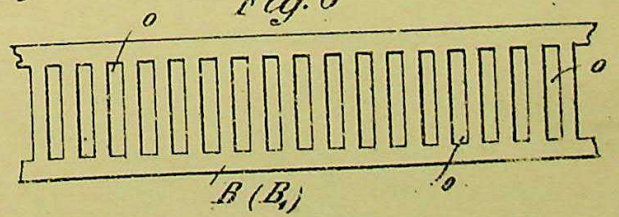


Fig. 6



[This Drawing is a reproduction of the Original on a reduced scale]

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N° 7770 A.D. 1889

Date of Application, 9th May, 1889—Accepted, 15th June, 1889

COMPLETE SPECIFICATION.

Improvements in Machines for Disintegrating and Distributing Manure or like Substances.

A communication from abroad by LUDWIG MALLICZKY, Steward of the Estates of Prince Schwartzenberg, in Cejkowitz, Bohemia.

I, WILLIAM PHILLIPS THOMPSON, F.C.S., M.I.M.E., of the Agency for Foreign Patent Solicitors, 6 Lord Street, Liverpool, and 6 Bank Street, Manchester, both in the County of Lancaster, and 323 High Holborn, in the County of Middlesex, Civil Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

The object of this invention is a machine designed to spread in a powdered form artificial or animal manure such as the dung of oxen or sheep.

Reference is to be made to the accompanying drawings, in which,

Figure 1 is an elevation from behind, of a machine constructed according to this invention.

Figure 2 a side view.

Figure 3 a section on the line *x x*, Figure 1.

Figure 4 a view from above (about half only being drawn).

Figures 5 and 6 enlarged views of the mechanism for dividing and scattering the manure.

The machine consists of a preferably wooden box of a convenient size about two metres wide being suitable, moving on two wheels R R and closed by a lid and which is provided in front (see Figure 4) with shafts G in which a draught animal may be harnessed. The box is in two parts, the upper part A which can be hinged to the bottom portion (as shown in Figure 3 dotted lines) is designed to receive the load of manure, while the under part A^2 is the actual distributor of the manure. The upper part decreases in size downwards and the bottom thereof is provided with a thin metal double grating B B (Figure 3) which by a sideways movement of one of its layers can be entirely closed. The lower division possesses also a similar double grating. In the bottom of the upper division and exactly above the opening in the bottom of the lower division is firmly fixed a strong sheet of metal B (as shown in Figure 6) provided with a number of rectangular openings *o*. The opening in the bottom of the lower division is also provided with a similar grating B. In the upper division A above the fixed grating B and in the lower division A^2 below the fixed grating respectively, are placed metal gratings B^1 with precisely similar openings, but movable and which can be moved either to right or left, so that by moving the movable metal gratings the openings in the fixed one can be either partially or completely closed or covered.

The pushing of the movable gratings is accomplished by means of hand levers *h* (Figures 1 and 3) the movement of which on their axles *d* turns a toothed wheel placed thereon which moves a toothed rack Z gearing therewith and firmly attached to the gratings intended to be moved, the movement is transmitted through a slot *s* made in the side of the case, which slot has a breadth of the same size or only slightly larger than the openings *o* in the grating.

The amount of the movement is indicated on a scale *c* by a finger *b* connected firmly with the rack Z and the size of the openings in the grating can be seen from the position of the indicator. In the upper division there is further a stirring arrangement (see Figures 3 and 5) which sends the manure into the lower division to be distributed. This stirring apparatus consists of a rotating roller W^1 or shaft journalled in the side walls of the box and which is set in motion by a spur wheel Z^1 (Figures 1, 2, and 4) connected by means of cogwheels Z^2 Z^3 driven by the rotation of the wheels

of the machine. On the roller W^1 (Figure 5) at a given distance apart are fixed projecting spikes with blunt points C arranged in the form of a spiral so that (from a side view) each spike stands about 90 degrees away from the following one, and so that when the roller is turned a number of spikes are always in close proximity to the corresponding openings in the grating. The manure placed in the upper division A^1 of the box, even when caked and lumpy, is by the revolving of the roller broken up, and the extension of the spikes to close proximity to the openings in the grating prevents clods passing through the same and also their stopping them up. The lower division A^2 of the box as before stated contains also a double grating which has the same arrangement as the double grating in the upper division. There is here also a roller W^2 journalled in the sides of the box on which are placed at given distances side by side a number of interchangeable rings *r* with spikes D radiating therefrom, between which the manure falls from the upper into the lower division. The rings *r* are placed at a distance from one another corresponding to the spaces between the grating openings measured from the centre of one to the centre of the other. The distance of the spikes on a ring from one another is determined by the length of the grating openings *o*. The points of these spikes D reach fully up to the openings *o* of the fixed upper grating and down into the openings of the fixed under grating B and the points of the spikes C by the rotation of the rollers W^1 W^2 come into close proximity whereby firstly any clogging of the grating openings is prevented, and, secondly, an even distribution of the manure is attained.

In order to throw the machine out of gear when the gratings are closed, the driving cogwheels Z^1 Z^2 Z^3 are disengaged by pushing sideways the cogwheel Z^2 which is connected by a key groove with the roller W^2 into the position as shown in dotted lines in Figure 1. This is effected by means of the lever H, pinion *g* and toothed rack *t* an extension of which is connected with the cogwheel Z^2.

It is clear that according to the position of the movable grating B more or less manure falls from the upper to the lower division, and from the latter upon the land like rain.

Some of the advantages of the machine are as follows :—

It distributes evenly at every filling of the containing receptacle A^1, at any speed and over any ground and no clogging takes place even when moist manure is used.

One draught animal suffices to draw it and one workman to attend to it. According to the state of the weather and the position of the piece of land with 10 hours work and with a width of the containing box of two metres a daily distribution over from six to nine hectares can be effected.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, as communicated to me by my foreign correspondent, I declare that what I claim is :—

1. A machine for distributing artificial or animal manure, consisting essentially of a receptacle divided into two parts mounted upon wheels in the upper division A^1 of which the manure placed therein is broken up by a stirring apparatus and falls through the openings of a double grating into the under box A^2 for distribution, from which by means of a rotating spiked roller it falls disintegrated like rain through the openings of a second metal grating, substantially as described.

2. The stirring apparatus consisting of a roller W^1 journalled in the sides of the division A^1 of the case, provided with spikes C arranged in spiral form and reaching to the openings *o* of the grating B^1 the said roller being connected by means of cogwheels Z^1 Z^2 Z^3 with the wheels of the machine, substantially as described.

3. In a machine such as described the distributing apparatus driven by an adjustable cogwheel Z^2 consisting of a roller W^2 journalled in the sides of the case provided with radiating spikes D which spikes reach above and below to within the openings *o* of the grating B, substantially as and for the purposes set forth.

4. The double metal gratings B B^1 of which one (B) is fixed and the other (B^1) is

movable to a varying extent, and the mechanism for moving these grates (so as to cover the openings *o*) consisting of a toothed rack Z leading direct to and firmly connected with the grating, which, by means of the pinion *a* can be reciprocated by the handle *p*, substantially as and for the purposes set forth.

Dated this 8th day of May 1889.

WM. P. THOMPSON & Co.,
Agents for the Applicant.

London: Printed for Her Majesty's Stationery Office. by Darling & Son, Ltd.—1889.